Relationships of Fish Communities and Availability of Deep-water Habitat

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The purpose of this study is to examine relationships of fish communities and populations of channel catfish and smallmouth bass with existence of deep-water habitats in three eastern Iowa rivers. Fish populations may differ in river reaches that differ in access to deep water, either within the reach itself or in connected reaches. Some river reaches have physical barriers (dams) blocking downstream access to large rivers with deep water, and other reaches do not have such barriers. Continuous depth surveys coupled with fish community surveys were used to: (1) quantify the existence of quality deep-water habitat in river reaches, and (2) quantify fish community characteristics in river reaches. Surveys provided basic biological data to assess differences in fish abundance and species composition among fish communities between river reaches, channel catfish and smallmouth bass population characteristics in the river reaches, and differences in age structure and growth rate among channel catfish and smallmouth bass populations between river reaches.

In the summer of 2003 and 2004, eleven of the 15 river reaches were mapped using a GPS/depth sonar. The collected depth data is entered into ArcGIS to ready the data for analysis. The depth data were used to create depth profiles and estimations of the availablity of deep-water habitat for each river reach. Further analysis is exploring relationships between the availability of deep-water habitat, main channel slope and basins

Fish community samples along with existing fish community data were collected for all 15 river reaches. All collected fish community data has been entered into a database and ready for further analysis. The fish community data were used to calculate summary statistics (i.e. fish IBI scores, species abundances, etc.) for each reach. The summary statistics are being used to explore relationships with the availablity of deep-water habitat.

Smallmouth bass and channel catfish aging structures were collected from all reaches. Each structure has been cataloged into a database and prepared for aging. The smallmouth bass and channel catfish aging structures are being used to estimate age distributions and growth rates for each reach population. These estimates will be used to further explore relationships with the availablity of deep-water habitat.

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